Reviewer's report

Title: MC1R variants predisposing to concomitant primary cutaneous melanoma in a monozygotic twin pair

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Reviewer: Paola Grammatico

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The authors presented an interesting case of concomitant primary cutaneous melanoma occurred in two monozygotic female twins which represent the third description in literature but the first with an extensive molecular study (CDKN2A, CDK4, MITF (E318K), MC1R).

The two patients show no changes in CDKN2A and CDK4 genes but the presence of two heterozygous variants (R151C-Y152X) in the MC1R.

Based on these findings the authors conclude that these two MC1R variants play an important role in melanoma susceptibility.

Whereas at present it is possible to identify the gene mutation responsible for melanoma susceptibility in only 40% of the genealogies, it cannot be excluded that genetic predisposition in their patients is due to a mutation in an unknown gene. This hypothesis should be considered in the discussion.

To reinforce their conclusiones the authors should extend molecular analysis of MC1R in more subjects of the same family to evaluate/exclude the presence of further healthy individuals with the same genetic condition.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.